

determining a measure of phylogenetic relatedness between the first sequenced region and the historical sequence data stored in the database based upon differences between the first sequenced region and the historical sequence data;

identifying patients infected or objects contaminated with the bacterium, virus or fungus based on the phylogenetic relatedness determination; and

tracking the spread of the microorganisms utilizing the identified infected patients and contaminated objects.

41. The method according to claim 1, wherein a plurality of regions of nucleic acid from the sample are sequenced and compared to historical sequence data and the measure of the phylogenetic relatedness between the plurality of sequenced regions and the historical sequence data is determined.

Remarks:

Claims 1, 3-5, 7, 8, 10-36 and 38-41 are now pending in this application. Applicants have presented new claims 38-41, amended claims 1, 3-5, 7, 8, 10-12, 15-17, 19, 21, 22, 25-28, 30, 32, 33, and 35 and canceled claims 6, 9 and 37 to clarify the present invention. Applicants respectfully request favorable reconsideration of this application.

The Examiner rejected claims 1 and 3-37 under 35 U.S.C. § 112, first paragraph. The claims no longer recite the term "real-time". However, Applicants disagree with the rejection and maintain that the present invention permits identification of infectious bacteria in real-time,

as the bacterial spread is occurring as compared to the days that PFGE typically requires. With respect to "absolute costs", "relative costs", "repeat mutation costs", and "point mutation costs", the specification describes these concepts at page 30, line 14, through page 33, line 1; page 30, line 7, through page 33, line 1; page 8, line 22, through page 9, line 6, and page 31, line 1, through page 33, line 1; and page 8, line 22, through page 9, line 6, and page 31, line 1, through page 33, line 1, respectively. Based upon these descriptions and the familiarity of those skilled in the art with cost analysis, the claims are supported by an enabling specification.

In view of the above, the claims are supported by an enabling specification and therefore comply with 35 U.S.C. § 112, first paragraph. Accordingly, Applicants respectfully request withdrawal of the rejection under 35 U.S.C. § 112, first paragraph.

The Examiner rejected claims 1 and 3-37 under 35 U.S.C. § 112, second paragraph, as indefinite. The claims no longer recite the term "real-time". Applicants have amended the claims to clarify the present invention. Therefore, Applicants submit that all claims comply with 35 U.S.C. § 112, second paragraph, and respectfully request withdrawal of this rejection.

The Examiner maintains his rejection of claims 1, 3-7, 9, 12-14, 21, 25-32 and 33-37 under 35 U.S.C. § 102(a) as being anticipated by Shopsin et al. The Examiner rejects claims 1, 3-14, 21, 22-29, 32 and 33-37 under 35 U.S.C. § 103(a) as unpatentable over Shopsin et al. (1999) taken with O'Brien et al. (1997) in view of U.S. patent 5,396,227 to Carroll et al.

As evidenced by the attached Declaration Under 37 C.F.R. § 1.132, Shopsin et al.

represents the work of the inventors of the present invention. The additional authors are not inventors but rather were researchers working at the direction and supervision of the inventors. Therefore, Shopsin et al. is the inventors' work and does not represent the work of others. Therefore, present invention was not described in a printed publication in this or a foreign country before the present inventors invented it. As a result, the rejections based upon the Shopsin et al. article should be withdrawn. With the removal of the Shopsin et al. article as a reference, none of the secondary references suggest the present invention by themselves. Accordingly, the rejection based upon Shopsin et al. should be withdrawn.


In conclusion, Applicants submit that this case is in condition for allowance and respectfully request favorable reconsideration of this case.

If an interview would facilitate the prosecution of this application, Applicants respectfully urge the Examiner to contact the undersigned at the telephone number listed below.

The Commissioner is authorized to charge insufficient fees and credit overpayment associated with this communication to deposit account no. 19-5127, order # 19124.0002.

Respectfully submitted,

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